an inside layer comprising at least one member selected from the group consisting of thermoplastic polyolefin, thermoplastic polyamide, thermoplastic polyester, and thermoplastic polyvinyl chloride.

A2 Cont'd

REMARKS

I. Status of the Claims and Above Amendments to the Claims

Claims 1-29 are pending in this application, of which claims 1, 28, and 29 are the pending independent claims, with claims 2-27 being the pending dependent claims.

The above amendment of Claim 5 is merely formal in nature, i.e, to correct an antecedent basis problem as pointed out by the Examiner. No new matter is added by this amendment, as the amendment is of a formal nature.

The above amendment of Claim 25 involves only the deletion of the phrase "the bag comprising," and is also of a formal nature, and was suggested by the Examiner in the August 22, 1995 Office Action. Applicants have amended Claim 25 in the spirit of cooperation, and Applicants contend that this amendment is of a formal nature, and does not involve the addition of any new matter.

II. The Rejections under 35 USC 112, Second Paragraph

The Examiner rejects Claims 2, 5-6, 9-10, 18 and 25 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and

distinctly claim the subject matter which Applicants regard as the invention. More particularly, the Examiner states that Claim 2 is indefinite because the structural relationship among the patch, the bag and the first and second shrinkable film is not clear, i.e., if the second film is part of the bag, the Examiner asks how the adhesive layer can be between the first and second film because the first shrinkable film is part of the patch.

In response, Applicants contend that Claim 2 is clearly not indefinite. Claim 1 is directed to a patch bag. The patch bag comprises two elements: a bag element and a patch element. Both the bag and the patch comprise heat-shrinkable films, in that the patch comprises a first heat-shrinkable film and the bag comprises a second heat-shrinkable film. The first heat-shrinkable film comprises a homogeneous ethylene/alpha-olefin copolymer. Thus, Claim 2 specifies a further feature over Claim 1: a patch bag (the combination) comprising both a patch (element) and a bag (element), with the further feature of an adhesive layer between the patch (element) and the bag (element). Applicants invite the Examiner to view FIG. 1 and FIG. 2 as evidence of the definiteness of Claim 2. In FIG. 1, the numeral "20" designates the entire combination, i.e., the "patch bag", which contains component members "patch component" 24 and "bag component" 22. In addition, see Applicants' specification at Page 20 lines 18-27. Clearly, there is nothing indefinite in Applicants' Claim 2. Claim 2 merely places an adhesive layer

between the patch and the bag. A careful reading of Claim 1 will show that there is a difference between the patch bag as the article being claimed, and the bag which is a component of the article being claimed. In answer to the Examiner's question, since the bag comprises the second film and the patch comprises the first film, it is clearly possible to provide an adhesive layer between the first film and the second film, as this is the same as providing an adhesive layer between the patch and the bag. Contrary to the Examiner's conclusion, Applicants contend that this difference is clear and not indefinite, and that Claim 2 further specifies that the patch bag" (i.e., the combination) comprises an adhesive layer between the patch (component) and the bag (component), and Applicants respectfully request withdrawal of this rejection, based on the arguments set forth above.

Turning next to Claim 5, the Examiner states that the first homogenous ethylene/alpha-olefin copolymer as recited in Claim 5 is unclear because Claim 1 did not set forth any first or second homogeneous copolymer; furthermore, the Examiner states that Claim 5 seems redundant because it just repeats the limitation of Claim 4. In response, Applicants note that Claim 5 (Once Amended, as set forth above) no longer recites the word "first." Applicants appreciate the Examiner's careful review and attention to this formal matter.

As to the alleged redundancy between Claims 4 and 5, Applicants contend that these claims are not redundant, because Claim 4 recites a density range for

both the first homogeneous copolymer as well as the second homogeneous copolymer, whereas Claim 5 recites a density range for only the first homogeneous copolymer. Moreover, a careful reading of Claims 4 and 5 reveals that Claim 5 is not redundant over Claim 4 for the further reason that is (Claim 5) depends from Claim 1, whereas Claim 4 depends from Claim 3. Based on the amendment and all of the arguments above, Applicants respectfully request withdrawal of the 35 USC 112, second paragraph rejection of Claim 5.

Regarding Claim 6, the Examiner states that the recitation of "the homogeneous ethylene/alpha-olefin copolymer" is indefinite because it is not known if this is referring to the first or second copolymer. In response, Applicants contend that Claim 6 is clearly not indefinite. A careful reading of Claim 1 (from which Claim 6 depends) reveals that nowhere does Claim 1 recite any "first" or "second" homogeneous ethylene/alpha-olefin copolymer. Rather, the only recitation to homogeneous ethylene/alpha-olefin copolymer in Claim 1 is in the last line thereof, i.e., "a homogeneous ethylene/alpha-olefin copolymer", which terminates the clause having the phrase "the first heat-shrinkable film" as the subject thereof. Thus, the homogeneous ethylene/alpha-olefin copolymer recited in Claim 6 refers to the heat shrinkable patch film, as lines 2-3 of Claim 1 recite the patch as comprising the first heat-shrinkable film, and lines 3-4 refer to the first heat shrinkable film as comprising the homogeneous ethylene/alpha-olefin

copolymer. Thus, Applicants contend that Claim 6 is not indefinite, based on all of the arguments set forth above.

Regarding Claim 9, the Examiner states that in lines 3-4 thereof, it is not clear how the phrase "at 185°F, of the second heat-shrinkable film" ties in with the remainder of Claim 9. In response, Applicants note that the recitations of Claim 9 are to the effect that he first heat-shrinkable film (the patch film) has a free shrink (at 185°F) of from about 40 to 120 percent of relative to the free shrink (at 185°F) of the second heat-shrinkable film (the bag film). Thus, the recitations of Claim 9 are to the effect that the patch film has a free shrink of from about 40 to 120 percent of *whatever free shrink the bag film has*. That is, the free shrink of the patch film is expressed in a manner which is relative to the free shrink of the bag film. Clearly, it is not indefinite to express the free shrink of the films using such a relative expression. Applicants claimed the patch bag in this way because it is desirable to provide a patch bag wherein the free shrink of the patch matches the free shrink of the bag, to keep delamination problems to a minimum. Accordingly, Applicants respectfully request withdrawal of this ground of rejection of Claim 9. Likewise, Applicants assert these same arguments in support of the definiteness of Claim 10, which the Examiner has also rejected on the same ground as "having the same problem as Claim 9."

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Regarding Claim 18, the Examiner rejects this claim as vague and indefinite because it "contradicts the previous claim." More particularly, the Examiner states that Claim 16 recites two outer layers comprising homogeneous ethylene/alpha-olefin copolymer while Claim 18 states that the outer film layers are substantially free of homogeneous ethylene/alpha-olefin copolymer. In response, Applicants contend that Claim 18 is clearly not indefinite. It should be noted that Claim 18 depends from Claim 17, which, in turn, depends from Claim 15, which, in turn, depends from Claim 12, which, in turn, depends from Claim 1. Thus, Claim 16 is not within the set of Claims from which Claim 18 depends; therefore, it is permissible to have Claim 16 contain recitations which are inconsistent with the recitations of Claim 18. Furthermore, no one or more of Claims 17, 15, 12, or 1 recite one or more outer film layers as comprising homogeneous ethylene/alpha-olefin copolymer. In fact, Claim 17 recites two *inner* layers as comprising homogeneous ethylene/alpha-olefin copolymer. Accordingly, Applicants respectfully request withdrawal of this ground of rejection, based on the arguments set forth above.

Finally, as to Claim 25, the Examiner suggests that Applicants delete the phrase "the bag comprising" from line 2 thereof, in order to make Claim 25 clearer. In response, and in the spirit of cooperation, Applicants have amended Claim 25 in the manner suggested by the Examiner.

III. The Rejection of Claims 1-29 under 35 U.S.C. 103, as Obvious over DUDENHOEFFER et al

The Examiner rejects claims 1-41 under 35 U.S.C. 103, as unpatentable over U.S. Patent No. 5,302,402, to Dudenhoeffer et al (DUDENHOEFFER et al). The Examiner states that DUDENHOEFFER et al discloses a heat shrinkable film bag with a thermoplastic film patch; that the patch surface comprises EVA, VLDPE, and/or LLDPE; that the patch can be a monolayer or multilayer film; that the VLDPE has a density of from 0.86 to 0914 g/cc and that the LLDPE has a density of about 0.915-0.930 g/cc; that both VLDPE and LLDPE comprise copolymers of ethylene with alpha olefins; that the patch comprises 85-35% VLDPE; and, that the patch bag is used for packaging bone food products such as beef rib.

The Examiner then admits that DUDENHOEFFER et al does not disclose that the patch is heat shrinkable as recited in Applicants' Claims 1 and 8-10. However, the Examiner goes on to state that it is not seen how this differentiates the prior art from the claimed invention. The Examiner continues by stating that DUDENHOEFFER et al use VLDPE and LLDPE, which are ethylene/alpha olefin copolymers, and are the same material used in the claimed invention; that Applicants have not shown the claimed invention produces unexpected properties over the prior art product. The Examiner continues by stating that Claims 1 and 23-26 require additional patches, and then concludes that it would have been

obvious for one of ordinary skill in the art to put additional film patches on the bag disclosed by DUDENHOEFFER et al to increase the strength of the bag; that putting additional patches is well within the determination of one skilled in the art; that the specific arrangement of the polymeric layers of the film as claimed in Claims 15-20, 22-25 is a matter of preference and is well within the determination of one skilled in the art; that it would have been obvious to arrange the polymeric layers in a way that would give the most optimum properties of the bag.

In response, Applicants contend that claims 1-29 are patentable over DUDENHOEFFER et al. More specifically, Applicants note that the rejection is under 35 USC 103 (obviousness), and Applicants contend that the Examiner has note made out prima facie case of obviousness based on DUDENHOEFFER et al., as is discussed in detail below.

Applicants note that the patch bag according to the present invention comprises a heat-shrinkable patch film and a heat-shrinkable bag film, and that the Examiner admits, on Page 4 line 5 of the Office Action, that "Dudenhoeffer et al. does not disclose that the patch is heat shrinkable as stated in claims 1, 8-10." Applicants contend that the difference between the combination of a heat-shrinkable patch and a heat-shrinkable bag is a difference which is of patentable significance with respect to DUDENHOEFFER et al. The importance of this difference can be more fully appreciated by an

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understanding of the difference between the requirement of a homogeneous ethylene/alpha-olefin copolymer (as recited in each of Applicants' claims) and the various ethylene/alpha-olefin copolymers disclosed in DUDENHOEFFER et al. A review of DUDENHOEFFER et al reveals the disclosure and use of the following ethylene/alpha-olefin resins:

Example Number	Ethylene/Alpha-Olefin Resin Identity
2	Dow XU61520.01
3	LLDPE: Dowlex 2045; VLDPE: unspecified
4A	Dow XU61520.01 (also known as Dow 4001)
5	Dow XU61520.01
6	Dow XU61520.01
8	Exxon Exact 3010B "VLDPE"; Union Carbide 1192 VLDPE

Of the various ethylene/alpha-olefin copolymers in the table above, only Exxon Exact 3010B is a *homogeneous* ethylene/alpha olefin copolymer. That is, each of the following are *heterogeneous* ethylene/alpha-olefin copolymer: Dow XU61520.01; Dowlex 2045; and Union Carbide 1192 VLDPE. Thus, it is incorrect to state that the VLDPE and LLDPE disclosed in DUDENHOEFFER et al is "the same material used in the claimed invention." It is not the same material at all. Although both of these polymer types can be produced from the

copolymerization of ethylene and C_4, C_6, and/or C_8 olefins, etc., homogeneous copolymers have a much narrower molecular weight distribution than heterogeneous copolymers. Moreover, homogeneous copolymers have a much more even distribution of comonomer throughout the polymer chain, compared with heterogeneous polymers. See pages 12-14 of Applicants' specification. Thus, one of skill in the art would have to pick the *only* homogeneous polymer from DUDENHOEFFER et al in order to have *any chance* of arriving at Applicants' claimed invention. The Examiner has not shown where there is any motivation to make such a selection from the several ethylene/alpha-olefin copolymers disclosed in DUDENHOEFFER et al. Again, only one of these polymers (Exact 3010B) is a homogeneous polymer. The remainder are all heterogeneous polymers, as pointed out above.

Furthermore, even if one of skill in the art did select Exact 3010B, it must be noted that the Examiner admits that the patch film disclosed by DUDENHOEFFER et al is a *NON*heat-shrinkable patch film. Applicants also point out that Exact 3010B is a *linear* homogeneous polymer, i.e, a homogeneous polymer *without long chain branching.* See Col 8 lines 1-12 of DUDENHOEFFER et al.

Applicants, employees of W.R. Grace & Co., are: (a) highly skilled in the manufacture of films suitable for use in heat shrinkable patch bags; (b) highly

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skilled in the conversion of the heat-shrinkable films to heat-shrinkable patch bags. Applicants are also familiar with a variety of *linear* homogeneous polymers as well as *long chain branched* homogeneous polymer, and have discovered that it is difficult to manufacture a *heat-shrinkable* film using a *linear* homogeneous polymer as disclosed in DUDENHOEFFER et al. That is, Applicants know that it requires extensive experimentation to be able to successfully produce a heat-shrinkable film using such a *linear* homogeneous polymer. Extensive experimentation is required because such films are generally made in a "cast process", in which a tubular "tape" is downwardly cast, is quenched, and is thereafter forwarded to a heating chamber, heated, and oriented by blowing the hot tubular tape into a blown bubble while simultaneously drawing the hot tape, in a manner which locks in stresses which provide heat shrinkability. The principal problem with *linear* homogeneous polymers is that many of them lack the melt strength to successfully undergo the downward cast process, as they simply "fall apart" upon emerging from the die. One way to address this problem is to provide additional film layers which have enough melt strength to allow the tape comprising the linear homogeneous polymer to survive casting. However, the selection of the particular polymers to be used with the linear homogeneous polymer, the amount of the other polymers, the selection of the particular

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linear polymer, the extrusion conditions, etc. is no simple task, and requires considerable experimentation before a commercially feasible process can be developed. As a result, Applicants contend that it would not be obvious to either:

(1) *select* the sole homogeneous polymer from DUDENHOEFFER et al; or

(2) *successfully use* this homogeneous polymer to make the *heat-shrinkable* patch film recited in Applicants' claims.

Moreover, it would be still more nonobvious to *both* select and successfully use the only homogeneous polymer disclosed in DUDENHOEFFER et al, in order to arrive at Applicants' claimed patch bag comprising a heat shrinkable patch film comprising a homogeneous ethylene/alpha-olefin copolymer. [It should be noted that the "blown film" process disclosed in DUDENHOEFFER et al (see Example 8 in DUDENHOEFFER et al) does not impose the melt strength requirements of a downward cast/bubble orientation process, and likewise, as the Examiner admits, is expressly disclosed as not resulting in a heat-shrinkable film. It should also be noted that Applicants disclose various heat shrinkable films comprising linear homogeneous ethylene/alpha-olefin copolymers. See Applicants' Examples 1, 2, 6, 7, 8, and 9.]

In addition, Applicants direct attention to their Examples 1, 2, 5, 6, 10, 11, 12, 13, and 14, and accompanying tables, which disclose various heat

shrinkable films comprising homogeneous polymer as having an impact strength comparable to linear low density/EVA blends, which is very good considering that LLDPE/EVA may be the most impact resistant formulation in commercial use in the prior art. Certainly this result is unexpected, and supports the nonobviousness of Applicants' claimed invention over DUDENHOEFFER et al.

Moreover, Applicants direct attention to particular dependent claims which recite a further basis of patentability: long chain branched homogeneous polymers. Based on the arguments set forth in the paragraph immediately above, Applicants contend that Claims 6 and 7, each of which recites a long chain branched homogeneous ethylene/alpha-olefin copolymer, is patentable over DUDENHOEFFER et al. DUDENHOEFFER et al nowhere discloses such a long chain branched homogeneous ethylene/alpha-olefin copolymer, and Applicants have discovered that such polymers are particularly useful for the manufacture of a heat shrinkable films for use in patch bags, both for the patch film as well as for the bag film, as Applicants have discovered that such long chain branched homogeneous polymers not only have the melt strength to undergo a cast process followed by orientation to result in a heat shrinkable film, they also provide a relatively high level of impact strength. The Office Action makes no mention of the motivation to arrive at the use of such long

chain branched polymers. Accordingly, on this additional basis, Applicants contend that the Examiner has further failed to make out a prima facie case of obviousness of Claims 6 and 7.

It should be further noted that DUDENHOEFFER et al teaches away from the use of an adhesive between the patch and the bag. For example, see the Abstract of DUDENHOEFFER et al, which states that "high energy is the sole bonding means." Accordingly, Applicants contend that the Examiner has failed to make out a prima facie case of obviousness of Claim 2, which recites an adhesive layer between the first heat-shrinkable film and the second heat shrinkable film.

Applicants contend that the additional dependent claims which have not been specifically argued above recite various features which stand as a further basis for the patentability of Applicants' invention. However, Applicants elect not to argue these various features at this time, instead relying on the arguments as set forth above. Applicants reserve the right to argue these further features at any future date.

IV. CONCLUSION

In view of all of the foregoing arguments, it is respectfully submitted that claims 1-29 are patentable over the prior art, and in condition for allowance.

Withdrawal of the rejections set forth in the August 22, 1995 Office Action is respectfully requested, with a favorable view towards the allowance of claims 1-29.

If the Examiner has any questions or otherwise needs to discuss any matters related to this application, the Examiner is invited to call the undersigned at the telephone number provided below.

Respectfully submitted,

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